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# (12) UK Patent Application (19) GB (11) 2 167 457A

(43) Application published 29 May 1986

(21) Application No 8529591

(22) Date of filing 3 Jan 1984

Date lodged 2 Dec 1985

(30) Priority data

(31) 19019 (32) 6 Jan 1983 (33) IT

(60) Derived from Application No 8400037 under Section 15(4) of the Patents Act 1977

(51) INT CL<sup>4</sup>

D05B 23/00 A47C 31/00

(52) Domestic classification

D1G S

A4M 12 16

(56) Documents cited

GB 1218393

(58) Field of search

D1G

A4M

Selected US specifications from IPC sub-classes D05B A47C

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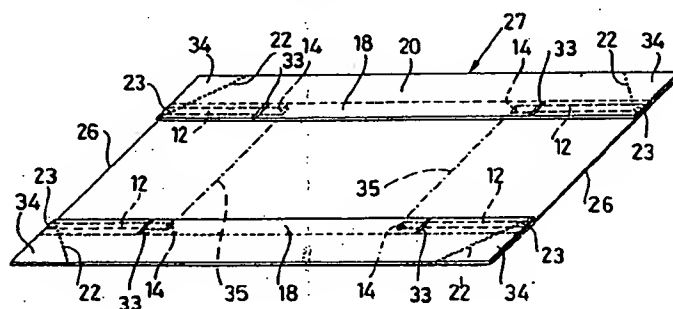
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(54) Removable linings for snugly wrapping tridimensional articles

(57) A lining of a piece of fabric or nonwoven material having an essentially quadrilateral outline adapted to wrap tridimensional articles, said lining having at least one of two opposite edges folded upon itself, the or each folded edge being provided at each end with a sewn seam line 22 across the corner of the folded edge. Elastic 12 is also sewn into each corner. The lining can then be placed over a mattress with each corner fitting snugly.

Fig.2



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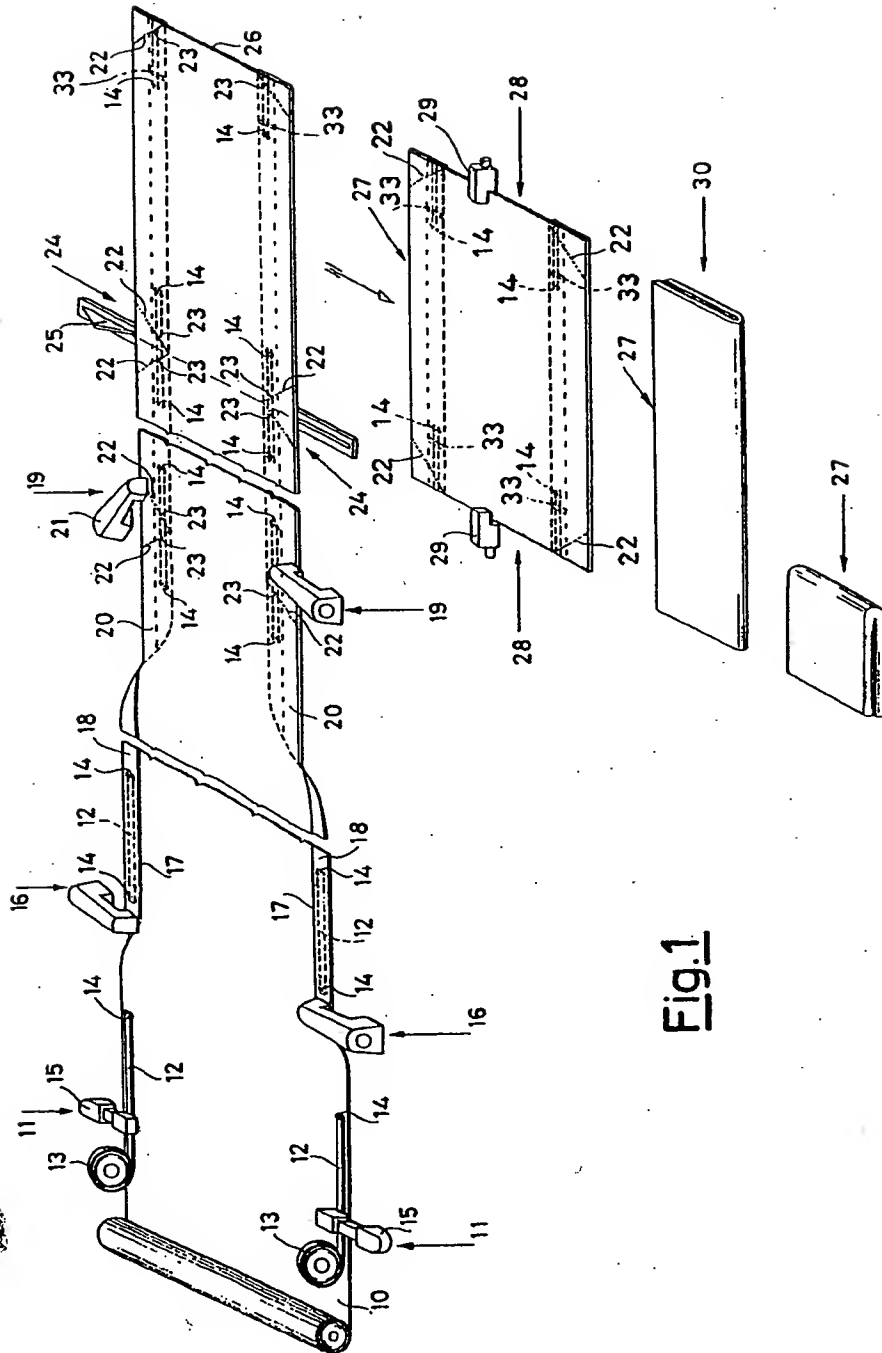
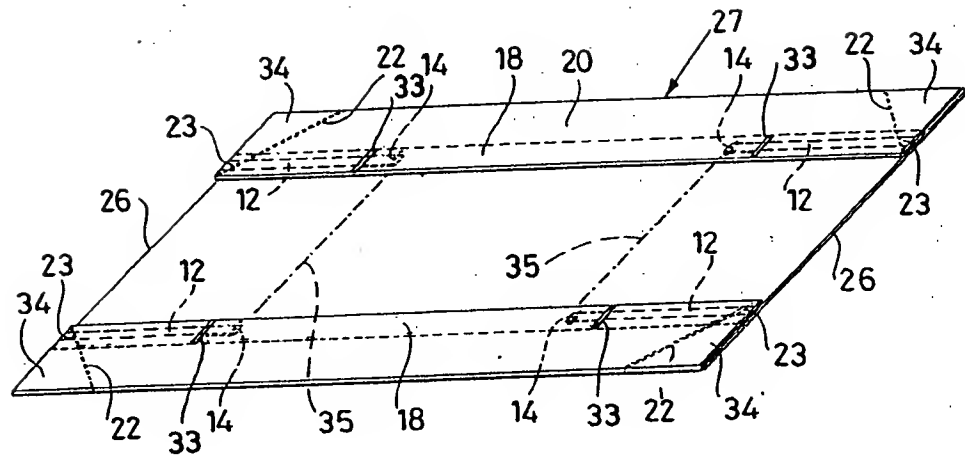
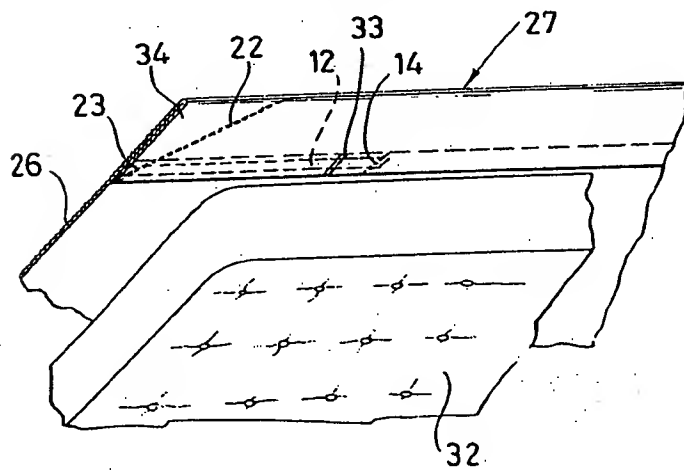


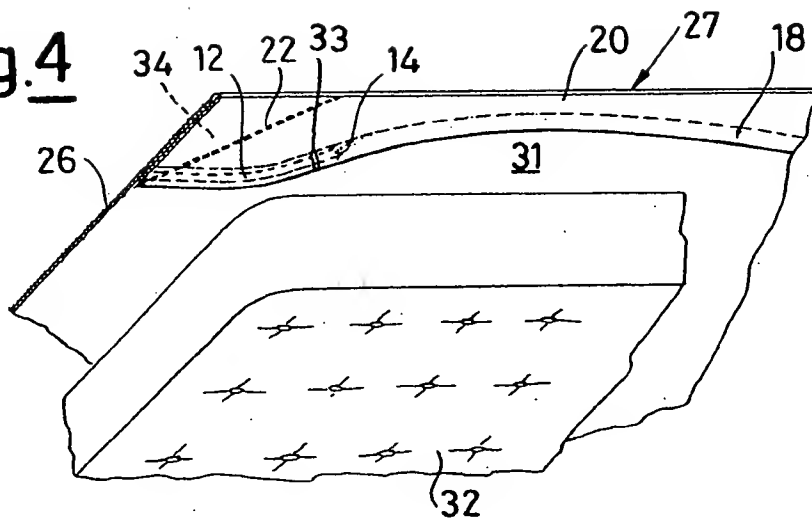
Fig.1

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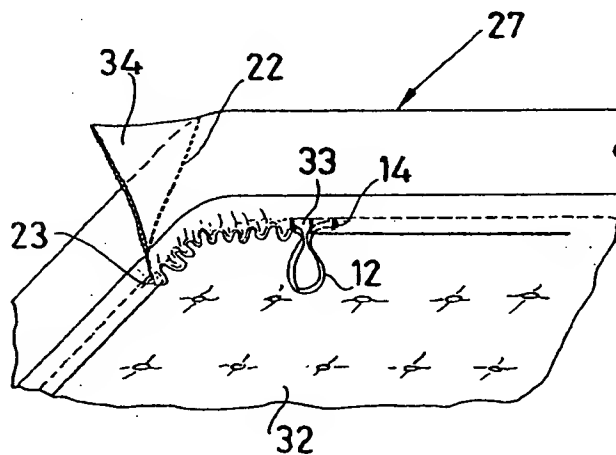
Fig.2Fig.3

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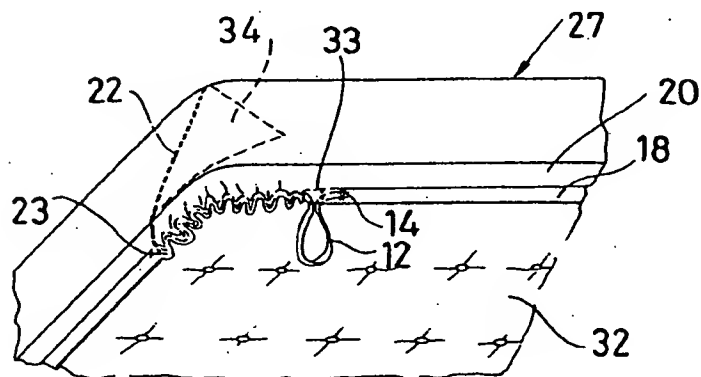
**Fig.4**



**Fig.5**



**Fig.6**



## SPECIFICATION

Removable linings for snugly wrapping  
tridimensional articles

5 This invention relates to removable linings which are capable of snugly receiving tridimensional articles; a lining can be considered to be, for example, a bed sheet, a protective lining for a mattress (under the sheet) or a lining for the upholstery of sofas and armchairs and so forth. Methods are known, such as that illustrated by the UK Patent 2066307 of 10/12/80 wherein, starting from a fabric roll, one obtains, at the outset, pieces having a preselected size.

The corners of the pieces in question are cut away so as to provide four folds which are arranged one on each side and such that, by transverse sewing the confronting and adjoining edges a lining can be formed which has a substantially parallelepipedal configuration.

20 In specially provided peripherally sewn curls, there are finally inserted, in registry with the four corners defined as aforesaid, resiliently stretchable members so as to make it possible to apply the lining stably while concurrently permitting the easy withdrawal of the lining.

25 A parallelepipedal lining having a resilient angular zones for fastening of the kind referred to above, however, originates a host of problems both from the point of view of the construction and upkeep and practical use.

30 The constructional problems stem from the circumstances that in a preliminary stage one has to prepare the strips with the cutaway corners, whereafter the strips are to be sewn on the four corners individually and only at that time it becomes possible to apply the elastic edging in registry with the angular zones. To obtain that, the sewing machine must be fitted with device for guiding the free edge, devices for detecting the transversal seams, devices for inserting the resilient member and for cutting it.

Upstream of the means listed above additional means should be provided for snipping the corners out of the fabric pieces, the latter being superposedly positioned in a certain number by a mechanism or an attendant so as to unroll them from their roll and to sever them out of same.

Upkeep problems are originated by cloth-hanging pressing folding and storage, which are eminently felt in the industrial field, in which, for linings of the conventional outline these operations are made automatically by pressing and folding machinery.

The aim of the present invention is to provide a removable lining by which the above problems are reduced.

According to the present invention, there is provided a lining of a piece of fabric or nonwoven material having an essentially quadrilateral outline adapted to wrap tridimensional articles, said lining having at least one of two opposite edges folded upon itself, the or each folded edge being provided with a sewn seam line in the vicinity of the two nonfolded sides of the piece.

The lining may have corrugation members present in the or one of the folded over edges, said

members being slidable within seats formed by edging members, said edging and said corrugation members being, in their turn, enclosed within the folding of said edges sewn in the vicinity of two nonfolded sides of the pieces.

In order to facilitate the understanding of the features and the advantages of the present invention, an example is given herein of them, with reference to the diagrammatical drawings forming a part of this specification, wherein:

Figure 1 diagrammatically shows the stages of one way of making an article according to this invention in which, starting from a fabric roll, one obtains a finished lining which is quite correctly folded in plan.

Figure 2 shows a lining made according to this invention as finished and laid on a planar surface.

Figures 3, 4 and 5 show the stages of placing such a lining onto a mattress, and

Figure 6 shows the same lining as before but differently applied to a mattress.

With reference to Figure 1, a fabric wound on a roll, indicated at 10, is fed to a station 11 for application of a resilient member 12, which can be pulled out, for example, from two sideway dispensers 13.

The stretchable member 12 is applied, longitudinally, in a preselected length, onto the fabric 10 and is sewn transversally at its two ends 14 by sewing and cutting machinery 15.

At a subsequent processing station 16, for example by baffling means (not shown to simplify the showing) the marginal edges of the fabric 10 are folded down onto the elastic band which has already been applied and a seamline 17 of the edges defines an edging 18 as a sliding sheath for the stretchable members 12 as such.

At a station 19 a folding down 20 is caused to occur of the longitudinal edges of the piece, which are folded onto themselves widely enough so as to enclose also the edging 18 or the sliding sheath for the stretchable members 12, or of non-resilient cords for corrugating the fabric.

Second sewing machinery 21 provides an angular sewing seam 22, which sets the fold 20 in position together with the stretchable member 12 at two spots 23.

The fabric goes ahead its way and reaches another station 24, in registry with specially provided severing means 25.

The transversal sever 26 of the fabric 10 is carried out along a line passing through the apexes of two angular seamlines 22 placed confrontingly on two opposite sides of the fabric. Thus, a lining is provided, indicated generally at 27 and which, shifted laterally, is then brought to a station 28 whereas transverse sewing machinery 29 effects the finishing of the warp threads along the severing lines 26, so that the lining 27 is completed. At the last station 30, appropriate folding machinery (not shown in the drawings) provide to fold the lining 27 so that the latter is in readiness for being packaged and stored.

The sequential order of the processing steps as described above by way of example only and

without limitation can also be modified. For example, immediately on completion of the application of the elastic band, the fabric can be severed and sent, after having been angularly shifted through 90°, to the subsequent folding and sewing stages. Likewise, the application of the elastic band can also follow the severing operation and can be perpendicular to the direction of feed of the processing line.

10 Devices for controlling and actuating the several processing stations are provided and such devices can be of any optical, mechanical and electronic type.

In actual practice, photoelectric cells will be used, 15 devices which count the stitches applied by the sewing machinery and devices which measure the fabric thickness as the fabric slides beneath appropriate feelers, so as to generate and to deliver to electronic counters the signal to energize or to 20 deactivate the operative members which are present in the several stations.

A lining 27 obtained in this way has, prior to being folded, the appearance shown in figure 2 and, more detailedly:

25 The fabric piece 10 appears to be transversally cut along the lines 26 and is trimmed thereat and, perpendicularly to the lines 26 it has two end folds 20.

In correspondance with the four corners, there are 30 seamlines 22 which are transversal to such angles and which latch, at 23, either end of the stretchable member 12, to the other end being stitched at 14.

Each fold 20, having two seamlines 22, permits to define a seat 31 which is adapted to receive the ends 35 of the articles to be wrapped, which, in the example shown in figures 3, 4 and 5 is an end of a mattress 32.

The stretching of the stretchable members 12 and the particular seamline 22 on the corners of the 40 lining 27 make it possible to provide a retaining corner as the lining is wrapped around the article concerned, together with a snug adhesion also to the sides of the article whereat no such stretchable members are provided.

45 The figures show the several stages for positioning a lining 27 onto a mattress 32.

As a matter of fact, in figure 3 the lining 27 is placed above the mattress 32 with the folds 20 downwards.

50 Subsequently, as best seen in figure 4, the end of the mattress is slipped into the seat 31 and once snugly fit therein, through a small opening 33 in the seam, the stretchable member 12 sliding with its central shank within the sheath 18 is pulled, so as to 55 latch the lining 27 onto the mattress 32 (figure 5).

In this mode of application, angular folds 34 remain outside the lining 27 as best seen in figure 5, but it is possible to act for having an application of a different kind (not shown).

60 As a matter of fact, the lining 27 in question could be placed above the mattress 32 but with the folds 20 pointing upward.

By means of the members 12 (elastics), pulled through the openings 33 and held fixed by 65 appropriate means, the corners of the seatings 31

can be avoided.

At this stage, the folds 20 are turned upside down so that the angular edges 34 are brought into the interior of the lining 27 and the latter lining 27, is 70 slipped, turned upside down, onto the mattress 32 (figure 6).

The angular folds 34, in an equivalent practical embodiment can be snipped away prior to finishing and folding the lining, by providing, additionally to the transversal severing means, 25, further cutting means (not shown in the drawings for the sake of simplicity).

It is apparent that the lining 27, after having removed the fastenings for the elastic band 12, 80 reverts to a quite planar configuration so that the upkeep operations referred to above can safely be carried out.

In addition, and as diagrammatically shown in dot and dash lines in figure 2, the ends of the stretchable 85 members 12 pointing towards the interior of the fabric piece, instead of being sewn at 14 to the piece can be interlocked by a nonresilient member, for example a ribbon 35. By so doing, as the bedsheet is applied, by the agency of the interlock member 35, 90 the pull of the stretchable members 12 is caused to occur and, as a result, the corrugation of the respective sliding sheaths 18.

An article made according to the invention, as it is clearly apparent from the example shown herein, 95 affords the following advantageous features.

The method for manufacturing such removable linings makes it possible to provide a continuous production line which is entirely mechanized with the automation of the relative functions. The article, 100 that is the lining, permits to simplify the upkeep especially when made with mechanical pressing and folding machinery, and storage of such linings is easy, in addition to the incontestable advantages of a great ease of application to and removal of the 105 lining from the article concerned, a very satisfactory adaption also to different shapes being warranted, while concurrently providing a reliable fastening during use.

Attention is drawn to our co-pending application 110 No. 84 00037 (2,133,052) which discloses similar subject matter as the above and from which the present application is divided.

#### CLAIMS

115 1. A lining of a piece of fabric or nonwoven material having an essentially quadrilateral outline adapted to wrap tridimensional articles, said lining having at least one of two opposite edges folded upon itself, the or each folded edge being provided 120 with a sewn seam line in the vicinity of the two nonfolded sides of the piece.

2. A lining according to claim 1 wherein corrugation members are present in the or one of the folded over edges, said members being slidable 125 within seats formed by edging members, said edging and said corrugation members being, in their turn, enclosed within the folding of said edges sewn in the vicinity of two nonfolded sides of the pieces.

130 3. A lining according to claim 2 wherein free ends

of corrugation members, arranged on edges of opposite sides, are interlocked by a nonresilient member.

4. A lining according to claim 1, 2 or 3 wherein the  
5 seamlines of said fold intersect the corner of said lining.

Printed for Her Majesty's Stationery Office by Courier Press, Leamington Spa. 5/1986. Demand No. 8817356.  
Published by the Patent Office, 25 Southampton Buildings, London, WC2A 1AY, from which copies may be obtained.